

REMARKS

Claims 1-25 are pending. Claim 1 is amended to correct a minor informality found therein.

In paragraph 7, on page 11 of the Office Action, claims 10 and 24 were objected to as being dependent upon a rejected base claim but indicated as allowable if rewritten in independent form including all of the features of the base claim and any intervening claims. Applicant appreciates this indication of allowability but submits that claims 1 and 16, the claims from which claims 10 and 24 respectively depend, are allowable for the reasons discussed below.

The courtesies extended to Applicant's representative by Examiner Culler during the personal interview held on June 6, 2006 and Examiner Hirshfield during the telephone interview held June 14, 2006, are appreciated. The reasons presented during the interviews as warranting favorable action are incorporated into the remarks below and constitute Applicant's record of the interviews.

In paragraph 1, on page 2 of the Office Action, claims 1-15 were objected because of a minor typographical error contained in claim 1. In response, claim 1 has been amended. Accordingly, withdrawal of the objection is respectfully requested.

In paragraph 3, on page 2 of the Office Action, claims 1-9, 11, 16, 18-23 and 25 were rejected under 35 U.S.C. §103(s) as being unpatentable over U.S. Patent No. 5,580,042 to Taniguro et al. (Taniguro) in view of U.S. Patent No. 6,712,357 to Tranquilla. The rejection is respectfully traversed.

Applicant's claim 1 calls for a recording medium conveying device that conveys a recording medium to a recording area, comprising a pair of first conveyor rollers that are provided upstream of and adjacent to the recording area and convey a recording medium by nipping the recording medium therebetween, no roller being disposed between the pair of first

conveyor rollers and the recording area; a detector that detects a position of the recording medium; a nipping force changing unit that changes the nipping force of the pair of first conveyor rollers; and a controller that controls an operation of the nipping force changing unit in accordance with the position of the recording medium detected by the detector.

Applicant's claim 16 calls for an image forming apparatus that forms an image onto a recording medium, comprising an image forming device that forms an image onto the recording medium; a platen that is provided facing a recording operating service of the image forming device; a pair of first conveyor rollers that are provided upstream of and adjacent to the platen and convey the recording medium by nipping the recording medium therebetween, no roller being disposed between the pair of first conveyor rollers and the platen; a detector that detects a position of the recording medium; a nipping force changing unit that changes the nipping force of the pair of first conveyor rollers; and a controller that controls an operation of the nipping force changing unit in accordance with the position of the record medium detected by the detector.

In paragraph 1 on page 3, the Office Action admits that Taniguro fails to disclose, teach or suggest several features of the invention. Specifically, the Office Action concedes that Taniguro does not teach or suggest a detector that detects a distance from a pair of first conveyor rollers to a trailing edge of the recording medium and thereby a position of the recording medium in accordance with a distance of the recording medium conveyed by the pair of first conveyor rollers; a nipping force changing unit that changes the nipping force of the pair of first convey rollers; or a controller that controls the operation of the nipping force unit and allows the nipping force changing unit to reduce the nipping force of the pair of first conveyor rollers, step by step, in accordance with the detection result of the detector.

The Office Action relies upon Tranquilla to cure the multitude of deficiencies of Taniguro. A *prima facie* case of obviousness for a §103 rejection requires satisfaction of

three basic criteria: there must be some suggestion or motivation either in the references or knowledge generally available to modify the references or combined reference teaching, a reasonable expectation of success, and the references must teach or suggest all of the claim limitations. See MPEP §706.02 (j). Applicant respectfully asserts that the Office Action does not satisfy these requirements for claims 1-25.

Taniguro describes a sheet conveying apparatus for recording sheet in a printer, typewriter, copying machine or facsimile system (Taniguro, col. 1, lines 9-15). Taniguro discloses an automatic sheet supplying device 111, a sheet conveying portion 112, a sheet discharge portion, a carriage portion 115, and a cleaning portion 116 (Taniguro, col. 3, lines 41-49 and col. 6 - 7). The sheet supply portion separates the recording sheets P and transfers the recording sheets P, one-by-one, to the sheet convey portion 112 (Taniguro, col. 6, lines 31-56 and Fig. 9). The sheet conveying portion 112 includes a convey roller 136, pinch rollers 137 a pinch roller guide 139, pinch roller springs 140, a PE sensor level 141, a PE sensor 142, a PE sensor spring 143, an upper guide 145 and a platen 146. At the conveying portion 112, a nip, located between the convey roller 136 and the pinch rollers 137, pinches the recording sheet P while the platen 146 guides the recording sheet P. As shown in Figures 2 and 8, convey roller 136 and pinch roller 137 serves as a pair of rollers located upstream and adjacent to the platen 146 (printing area). The PE sensor level 141 and the PE sensor 142 detect a tip or lead end of the recording sheet P in order to determine a printing position on the recording sheet P.

The sheet discharge portion is located downstream of the platen 146 (the printing area). The sheet discharge portion includes a sheet discharge roller 159, a transmission roller 160 for transmitting a driving force of the convey roller 136 to the sheet discharge roller 159, spurs 161 for aiding the sheet discharge, and a discharge tray 162. Discharge roller 159 and spurs 161 (Taniguro, col. 7, lines 34 - 40).

Comparing the components of Taniguro with the invention, the paired rollers 136, 137 (convey roller 136 and pinch rollers 137) of Taniguro constitutes the pair of first conveyor rollers of the invention, and sheet discharge roller 159 and spurs 161 of Taniguro constitute the pair of second pair of convey rollers of the invention.

As discussed in the Amendments filed September 28, 2005 and March 10, 2006, Tranquilla discloses a printing device for document handling systems, such as check processors, tag printers and ticket printers (col. 1, lines 14 and 15). The transport area through the print area, which is defined by a hammer bank 124 opposing a print drum 126 and ribbon 128, includes a capstan 118 opposed by a pinch roller 120, that is upstream of and adjacent to the hammer bank 124/print drum 126, but for an edge sensor 122 between the capstan 118/pinch roller 120 and hammer bank 124/print drum 126, and an exit transport element 130 comprising a drive roller 132 and a pinch roller 134. Further upstream, from the capstan 118/pinch roller 120, is an entrance transport element 112. The entrance transport element 112 includes a drive roller 114, a pinch roller 116 and a pinch force release mechanism 152. The entrance transport element 112 is a high speed delivery element that passes the print medium to the capstan 118/pinch roller 120 position.

This structure provides two methods of operation, one for long documents and one for short documents. Only in the long documents is the pinch force release mechanism 152 activated to release the pinch roller 116 of the entrance transport element 112. In no case is the nipping force of the capstan 118/pinch roller 120 changed, that is, the nipping force of the conveyor rollers adjacent the printing area is not changed.

In Tranquilla, the capstan 118/pinch roller 120 and drive roller 132/pinch roller 134, which, by position, equate to Applicant's pair of first conveyor rollers and pair of second conveyor rollers, constantly rotate. When the leading edge of a document is detected by the edge sensor 122, the pinch roller 116 is separated from the drive roller 114 of the entrance

transport element 112 which are upstream of the capstan 118/pinch roller 120. At this time, the pinch force release mechanism 152 is in a non-pinch force mode. However, the entrance transport pinch force F_p of the capstan element 118 against the pinch roller 120 is retained.

The document 110 is decelerated to a document processing position, as shown in Fig. 3b. Document processing is then performed and the capstan element 118 accelerates the document 110 toward and up to the speed of the exit transport element 130. At this time, the pinch force of the entrance transport element 112 is reapplied to increase the speed or to assist the capstan element 118 in accelerating the document 110 (col. 4, lines 41-64).

The preceding is for a long document. For a short document, the pinch roller 116 is not released and remains always in the pinch force mode primarily because a short document will clear the pinch force release mechanism 152, that is the drive roller 114/pinch roller 116. Thus, the paired rollers, the capstan element 118/pinch roller 120, on the upstream side of the print mechanism always maintain contact with the document 110. The capstan element 118/pinch roller 120 never release.

The furthest upstream pair of rollers, the entrance transport element 112 including the drive roller 114/pinch roller 116, release for long documents but repinch to assist in accelerating the document toward and up to the speed of the exit transport element 130. Therefore, the releasing elements are not at Applicant's claimed position having no roller between the pair of first conveyor rollers and the recording area. Tranquilla's nonreleasing capstan element 118/pinch roller 120 are between the pair of first conveyor rollers (that change the nipping force) and the recording area which is counter to Applicant's invention (with an interposed edge sensor 122).

Instead of curing the deficiencies of Taniguro, both Taniguro and Tranquilla suffer the same deficiency. Both of the Applicant's independent claims call for the changing the nipping force of the pair of first conveyor rollers and the pair of first conveyor rollers are

provided upstream of and adjacent to the recording area (platen) with no roller being disposed between the pair of first conveyor rollers and the platen. The applied references operate to the contrary. Actually, no nipping force in either the first pair of rollers (136, 137) of Taniguro or the first pair of rollers (118, 120) in Tranquilla is changed.

However, in paragraph 1 on page 3, the Office Action attempts to modify the first pair of rollers (136, 137) with the releasing elements of the pinch force release mechanism 152 of the pair of rollers (114, 116) of Tranquilla. No motivation exists within either applied reference to modify or combine the applied references as suggested by the Office Action.

To bolster its position, in paragraph 2 on page 3, the Office Action argues that Tranquilla teaches a pair of first conveyor rollers 114, 116 are provided upstream of and adjacent to the recording area. This interpretation of Tranquilla is incorrect. As noted above, roller 114 is a drive roller and 116 is a pinch roller that are part of the entrance transport element 112. Between them and the print area, defined by the hammer bank 124/print drum 126, is what is truly the first pair of conveyor rollers, the capstan 118/pinch roller 120. The plain and ordinary meaning of the word "adjacent" means close to; lying near or next to; or joining. In Tranquilla, the entrance transport element 112 has the capstan 118/pinch roller 120 lying between it and the hammer bank 124/print drum 126 which constitutes the print area. As such, it does not meet the definition of adjacent which is misinterpreted in the Office Action.

Furthermore, Taniguro exerts its nipping force of the first pair of conveyor rollers onto recording sheet P by urging pinch rollers (137) against the convey rollers (136) by biasing the pinch roller guide (139) (Taniguro, col. 7, lines 5-8). Once exerted by the pinch rollers (137) onto the convey roller (136), the nipping force remains constantly applied with a predetermined pressure (Taniguro, col. 2, lines 36 - 39 and Figs. 20A - 21C). Thus, Taniguro explicitly teaches that its nipping force remains constant once applied with a predetermined

pressure. Therefore, there is no motivation to modify the first pair of rollers (136, 137) of Taniguro with the releasing elements features of the pinch force mechanism 152 of the pair of rollers 114, 116 of Tranquilla.

Instead, the combination destroys the applied references. Both applied references specifically teach away from the combination because the combination suggested by the Office Action destroys the functionality of Taniguro by rendering the device of Taniguro inoperable for its intended purpose. The first requirement for establishing a case of *prima facie* obviousness is that there must be a suggestion or motivation within the applied references to modify or combine the applied references' teachings (M.P.E.P. § 2143). However, if the proposed modification renders the devices disclosed within the applied references unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (M.P.E.P. § 2143.01(V) and *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

This is the problem with the combination suggested by the Office Action. Both references specifically teach that the combination would destroy the operability of Taniguro, which is the primary reference. Specifically, in col. 1, line 67 - col. 2, line 2, Tranquilla states that "reliable document transporting dictates that at least one drive or capstan roller element be contacting the document at all times" (emphasis added). Tranquilla performs its adjustment of the nipping force by completely removing the nipping force and then reapplying the nipping force (Tranquilla, col. 4, lines 19-64). Thus, if the combination is implemented as suggested by the Office Action so that there is an adjustment of the pinch roller (137) and convey roller (136), when the nipping force is removed, there is no longer contact between the document and any roller in Taniguro, for example, see Fig. 2 of Taniguro. This, is specifically contrary to the teaching of Tranquilla, as discussed above, which states that there must be contact between the document and at least one roller at all

times. Thus, the combination destroys the applied references. Therefore, there is no suggestion or motivation within the references to make the combination.

Another reason that there is no motivation to combine or modify the applied references is because it would be difficult to structurally combine Taniguro and Tranquilla. Taniguro's sheet conveying apparatus does not provide sufficient spacing to replace the rollers 136 and 137 with the all of Tranquilla's rollers 114, 116 and the nipping force changing unit 152. Thus, one skilled in the art would not combine or modify the structures of the applied references as suggested by the Office Action.

Moreover, neither Taniguro nor Tranquilla says anything about reducing the nipping forces of the first conveyor rollers, and they say nothing about a step by step nipping adjustment to reduce the nipping force of the pair of first conveyor rollers (claim 4); nothing about allowing the nipping force changing unit to change the nipping force while the pair of first conveyor rollers are not driven; nothing about the detailed actions found in claim 8 or the actions found in claim 9; nothing about intermittently driving the pair of conveyor rollers (claim 18); nothing about allowing the nipping force changing unit to change the nipping force while the first pair of conveyor rollers are not driven (claim 20), or the details of claims 22 and 23. Likewise, Tranquilla does not anticipate the subject matter of the remaining rejected claims for all of the reasons discussed with respect to claims 1 and 16 and for the additional features recited.

Therefore, the combination of Taniguro and Tranquilla, taken in combination or alone, does not disclose the claimed invention, and it is respectfully requested the rejection be withdrawn.

In paragraph 4, on page 9 of the Office Action, claims 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Taniguro in view of Tranquilla and further in view of U.S. Patent No. 5,129,749 to Sato; in paragraph 5, on page 9 of the Office Action,

claims 14 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Taniguro in view of Tranquilla and further in view of Dodge, U.S. Patent No. 4,619,451; and in paragraph 6, on page 11 of the Office Action, claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Taniguro in view of Tranquilla and further in view of Burkard et al. (Burkard), U.S. Patent No. 4,053,224. The rejections are respectfully traversed.

The Office Action repeats the rejections as presented in the Office Actions mailed May 4, 2005 and December 12, 2005. As discussed in the Amendments filed September 28, 2005 and March 10, 2006, there is limited rebuttal of the points Applicant made in the Amendment filed September 28, 2005. Therefore, Applicant's traversal of these rejections remain for the reasons previously argued in the Amendments filed on September 28, 2005 and March 10, 2006.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-25 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Dinnatia J. Doster-Greene
Registration No. 45,268

JAO:DJD/sqb

Date: June 23, 2006

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--